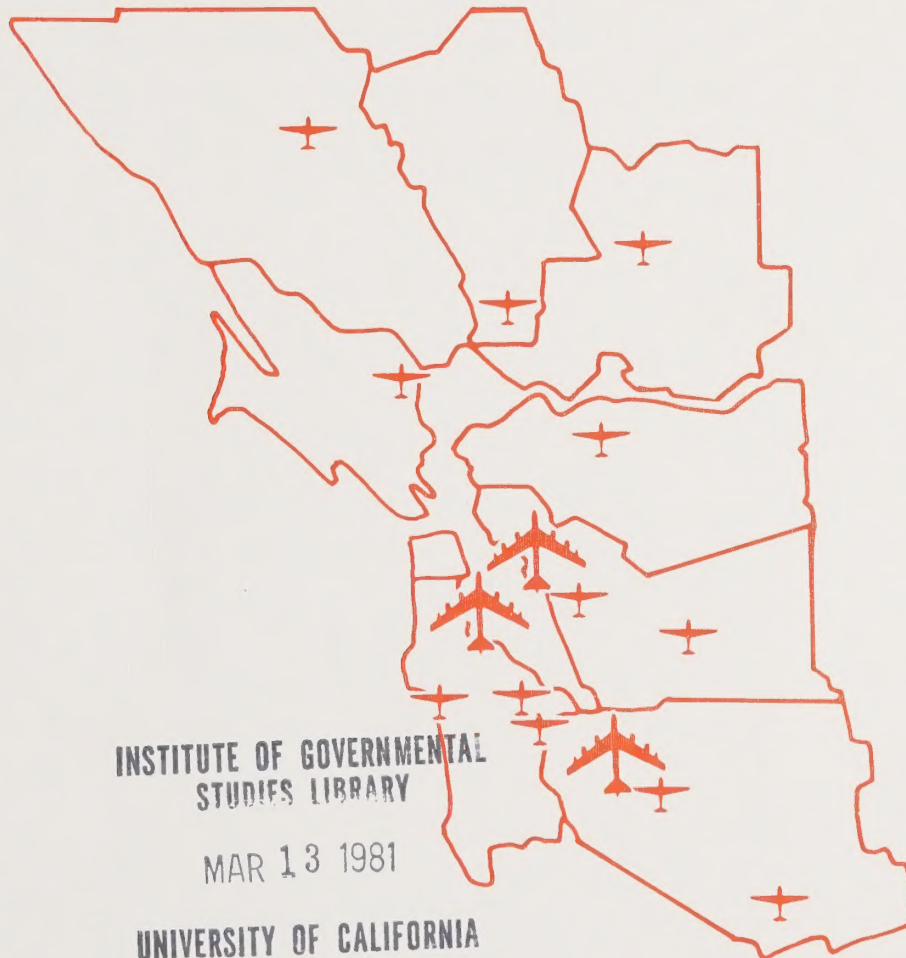


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REGIONAL AIRPORT PLAN



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Environmental Impact Report

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FINAL ENVIRONMENTAL IMPACT REPORT FOR THE
REGIONAL AIRPORT PLAN:
Amendments to the MTC Regional Transportation Plan
(SCH #80052023)

October, 1980

Metropolitan Transportation Commission

Association of Bay Area Governments

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I. INTRODUCTION TO THE ENVIRONMENTAL IMPACT REPORT

The Regional Airport Plan Summary Report, in both its content and format, was designed to fulfill the California Environmental Quality Act (CEQA) regulations required in revising the airport policies of the Metropolitan Transportation Commission's Regional Transportation Plan. Specifically, the Summary Report provides:

- 1) A description of the proposed project--revised policies and programs aimed at gaining a better distribution of commercial air traffic among the Bay Area's three major airports.
- 2) Description of the existing environmental setting--assessment of the current noise, air quality, airport access, airspace and energy conditions.
- 3) Environmental impacts--evaluation of the significant impacts that could occur when the plan is implemented. These impacts concern noise, air quality, airport access, airspace and energy use. (There are other impacts that will occur as a result of airports carrying out their development or master plans. Such impacts have been analyzed in the environmental impact reports prepared for the airport master plans.)
- 4) Alternatives to the proposed action--evaluation of the environmental impacts of possible alternatives to the recommended air traffic distribution.
- 5) Mitigation to impacts--recommended regional policies and programs to reduce significant impacts below those that could occur as a result of recommended regional air traffic redistribution.
- 6) Growth-inducing impacts--assessment of airport employment increases, and related land use changes, that could result as a consequence of air traffic redistribution.

To avoid repetition and duplication of the environmental impact information already provided in both the Summary Report and various supporting technical documents, this EIR will simply reference locations within the Summary Report. In some cases, information additional to that provided in the Summary Report has been added. The Environmental Impact Report (EIR) also includes a number of sections that are required by CEQA but not specifically contained in either the Summary Report or any of the technical reports.

In using this format, the EIR complies with recent revisions to CEQA regulations that 1) encourage the integration of the CEQA process into the normal planning program and 2) urge reduction of delay and paperwork in preparing and reviewing environmental impact reports.

As indicated, more detailed impact analysis is available, on request, through a series of technical reports. Such reports serve as appendices to the EIR and include:

- Appendix A - Aviation Forecasts and Airport Alternatives
- Appendix B - Airfield Capacity
- Appendix C - Airspace Capacity
- Appendix D - Airport Ground Access Capacity
- Appendix E - Airport Noise Impacts
- Appendix F - Aviation Impacts on Air Quality
- Appendix G - Energy Use
- Appendix H - Airport Employment Projections and Impacts
- Appendix I - North Bay Aviation Study
- Appendix J - Summary Report

An environmental impact analysis has not been prepared for the general aviation section of the Regional Airport Plan because 1) environmental documents have already been prepared as part of each general aviation airport's master plan and 2) regional policies are concerned primarily with the scheduling of the improvements recommended in the various master plans. Airport improvements, and analysis and mitigation of their impacts, is the responsibility of the general aviation airport operators. Potentially significant impacts that could be of regional concern when an improvement is proposed have been identified in the Summary Report on pages 79 and 80.

II. SUMMARY AND PROJECT DESCRIPTION

A. Plan Description

The Metropolitan Transportation Commission proposes to adopt revisions to the aviation policies and programs contained in the Regional Transportation Plan. These revisions, in turn, will be reviewed and adopted as part of the Regional Plan by the Executive Board of the Association of Bay Area Governments. The policies have been revised through the development of a new Regional Airport Plan.

The plan provides the policy by which ABAG and MTC make decisions in the following areas:

1. Conformance of Local Plans and Projects with the Regional Airport Plan
 - Airport Master Plans
 - Airport Land Use Commission Plans
 - Local Government General Plans
 - Airport Development Projects
 - Environmental Impact Reports
 - Ground Transportation Facilities and Services
 - Housing and Land Use Projects
2. State and Federal Actions Affecting Airport Development
 - Allocation of Funds to Airports
 - Airline Routes/Adequacy of Service
 - Disposal of Military Airports
 - Variances from the State Airport Noise Standards
3. State and Federal Legislation Affecting Airport Planning
 - Airport and Airways Development Act (Funding)
 - Federal Aviation Act (Deregulation)
 - Airport Land Use Commission Reform
 - California Transportation Plan Policies
 - Federal Aviation Noise Policy
 - Federal Energy Policy

The main objective of the plan is encouragement of a better distribution of commercial air traffic among the Bay Area's three major airports. Getting airlines to use Oakland and San Jose airports, rather than concentrating their activities at San Francisco airport, can result in less noise, less air pollution, fewer delays due to congested airspace and greater convenience to the Bay Area air passenger.

BAY AREA AIRPORTS



EXISTING AIR CARRIER AIRPORTS



POSSIBLE FUTURE AIRLINE SERVICE POINTS
FOR CALIFORNIA CORRIDOR

The plan recommends traffic allocations for the three major airports -- San Francisco, Oakland and San Jose -- with each airport having its own unique role in the regional system. The recommended regional traffic allocation is provided on Table II-1. The recommended roles are:

- San Francisco Airport would continue as the major supplier of airline service for the region, particularly dominating air cargo and international flights. A policy limit of 31 million annual passengers would continue, because of environmental and airspace capacity concerns.
- Oakland Airport would be expanded to accommodate a larger share of the future Bay Area traffic. Most of the increase would be interstate and intrastate. Oakland can relieve San Francisco Airport by providing convenient ground transportation, via BART, for passengers with destinations in downtown San Francisco.
- San Jose Airport would provide more service to a larger proportion of its growing South Bay travel market. New service will be selectively increased to major domestic markets. However, the supply of new service will be controlled by airport noise abatement policies.
- Regional traffic allocations to the North Bay initially contemplated the introduction of limited intrastate service to one or more existing airports -- Hamilton AFB, Sonoma County, Napa County or Travis AFB (joint used with military). In addition to the convenience for the local air traveler, the placement of new airline service in the North Bay would provide an incremental measure of noise relief for communities around other Bay Area airports and also provide some reduction in airspace delays.

The North Bay recommendations were subsequently reviewed in the North Bay Aviation Study, a cooperative study by ABAG, MTC and local jurisdictions in the four North Bay Counties (See Appendix I). As a result of this study, completed in July 1980, Hamilton AFB, Sonoma County Airport and Napa County Airport are to be limited to general aviation use. The need for airline service at Travis AFB or a new airport will be reviewed in ten years (1990).

The plan also proposes a series of mitigation policies and programs to be used at all commercial airports to reduce impacts concerning 1) aviation noise, 2) air pollution 3) energy consumption, 4) traffic congestion, and 5) airspace safety. Airport financing policies are also suggested in the plan.

RECOMMENDED REGIONAL TRAFFIC ALLOCATIONS

1977 Conditions

Airport	Passengers*		Aircraft Movements		PPO**	Air Cargo Tons	
	Millions	% Region	Thousands	% Region		Thousands	% Region
San Francisco	18.9	77.3%	256.3	71.6%	81.2	470.0	95.9%
Oakland	2.5	10.2	43.7	12.2	57.7	7.9	1.6
San Jose	<u>3.1</u>	<u>12.5</u>	<u>58.0</u>	<u>16.2</u>	<u>53.7</u>	<u>12.2</u>	<u>2.5</u>
Total	24.5	100.0%	358.0	100.0%	73.5	490.1	100.0%

1987 - Low Forecast

Airport	Passengers*		Aircraft Movements		PPO**	Air Cargo Tons	
	Millions	% Region	Thousands	% Region		Thousands	% Region
San Francisco	24.0	64.9%	248.3	58.7%	104.1	717	90.8%
Oakland	7.0	18.9	89.4	21.1	80.3	40	5.0
San Jose	<u>6.0</u>	<u>16.2</u>	<u>85.6</u>	<u>20.2</u>	<u>71.0</u>	<u>33</u>	<u>4.2</u>
Total	37.0	100.0%	423.3	100.0%	92.0	790	100.0%

1987 - High Forecast

Airport	Passengers*		Aircraft Movements		PPO**	Air Cargo Tons	
	Millions	% Region	Thousands	% Region		Thousands	% Region
San Francisco	27.0	62.8%	271.2	56.0%	107.2	756	90.2%
Oakland	8.0	18.6	104.0	21.4	80.3	43	5.1
San Jose	7.0	16.3	97.8	20.2	72.6	36	4.3
North Bay	<u>1.0</u>	<u>2.3</u>	<u>11.7</u>	<u>2.4</u>	<u>85.6</u>	<u>3</u>	<u>.4</u>
Total	43.0	100.0%	484.7	100.0%	93.6	838	100.0%

1997 - Low Forecast

Airport	Passengers*		Aircraft Movements		PPO**	Air Cargo Tons	
	Millions	% Region	Thousands	% Region		Thousands	% Region
San Francisco	27.0	60.0%	257.4	58.8%	113.3	1,137	88.5%
Oakland	10.0	22.2	98.6	22.5	106.1	87	6.8
San Jose	<u>8.0</u>	<u>17.8</u>	<u>81.8</u>	<u>18.7</u>	<u>99.6</u>	<u>60</u>	<u>4.7</u>
Total	45.0	100.0%	437.8	100.0%	109.0	1,284	100.0%

1997 - High Forecast

Airport	Passengers*		Aircraft Movements		PPO**	Air Cargo Tons	
	Millions	% Region	Thousands	% Region		Thousands	% Region
San Francisco	31.0	55.4%	281.9	52.9%	118.9	1,524	85.4%
Oakland	13.0	23.2	126.5	23.8	107.4	150	8.4
San Jose	10.0	17.8	102.2	19.2	99.6	105	5.9
North Bay	<u>2.0</u>	<u>3.6</u>	<u>21.9</u>	<u>4.1</u>	<u>91.3</u>	<u>5</u>	<u>.4</u>
Total	56.0	100.0%	532.5	100.0%	111.1	1,784	100.0%

*On and off passengers. Includes "connecting" passengers but excludes "through" passengers.

**Passengers per Operation (excludes Charter, non revenue, and air cargo flights; also excludes "through" passengers).

B. Alternatives to the Recommended Plan

The major objective of the proposed plan is to redistribute future aviation traffic in the Bay Area in a manner that would reduce regional environmental problems and improve convenience to Bay Area air passengers. In developing the plan, a number of other regional distribution alternative were analyzed. These alternatives include:

Alternative 1 - Existing Airport Shares - This alternative assumes that each airport maintains its current share of traffic to the major air travel destinations.

Alternative 2 - Airline Plan - Developed from various reports issued by the Air Transport Association, a second alternative tests using San Francisco Airport to its fullest before major expansion takes place at San Jose or Oakland airports. Emphasis would then be placed on expansion of Oakland because of its overall potential for meeting long-range demand.

Alternative 3a and 3b - Proposed Regional Airport Plan - This alternative represents the current proposal described earlier in this chapter. It has been further divided into Alternatives 3a (no North Bay Airport) and 3b (North Bay Airport) to quantify the possible benefits of having future air services at a North Bay airport.

Alternative 4a - 4d - San Jose Airport Constrained - Largely for environmental reasons, the regional policy allocating up to 10 million annual passengers to San Jose Airport in 1997 needed to be reviewed. Alternative 4 consists of a range of options to "reallocate" 1.7 - 2.0 million annual passengers from San Jose to other Bay Area airports.

Alternative 5 - No growth

An analysis was prepared for a no growth alternative wherein none of the airports expand their facilities. For purposes of comparison, a no growth alternative at San Francisco is 3a (1987 - low forecast); at Oakland is 1 (1987 - low forecast); and at San Jose is 1 (1987 - low forecast).

C. Impacts

The significant environmental issues raised by the regional airport plan are:

- 1) noise--the recommended regional plan would result in a 9% reduction in regional noise exposure in 1987 and a 20% reduction in 1997. Strict airline compliance to the federal time schedule for replacing or re-engining aircraft is the single most important mitigation to aviation noise.
- 2) traffic congestion--there are different causes of traffic congestion at each of the three major airports. Similarly, the amount of freeway congestion caused by air passengers varies per airport. Based upon those facts, the implementation of the regional plan would result in highest increase in the percentage of highway capacity being used by air passengers at Oakland and San Jose Airports and the lowest increase at San Francisco. Use of employee vanpools, transit and methods to reduce "kiss-and-fly" trips can reduce airport traffic by 13% at San Francisco; 25% at Oakland and 25% at San Jose.
- 3) airspace capacity--implementation of the recommended plan could increase airspace capacity by 40%, resulting in fewer delays or possible diversions. Even with traffic redistribution, there will be a systemwide deficiency in airspace capacity in 1997. These impacts could partially be mitigated by a) limiting demand during peak periods, and b) developing reliever airports to enable general aviation to move away from busy commercial air corridors.
- 4) air quality--implementation of the regional airport plan will have little effect on hydrocarbons and nitrogen dioxide due to their low contribution to the regional problem. Under the regional plan, air quality problems will be reduced at San Francisco Airport and increased at San Jose Airport as air passenger traffic is redistributed. There will continue to be violations of both the 1-hour and 8-hour carbon monoxide standards at San Jose Airport. There are no projected violations of the 1-hour standard at San Francisco Airport. There are some projected violations of the 8-hour standard; however, these could be eliminated if the proposed mitigation measures are implemented. Additional mitigation measures that may help in achieving compliance at San Jose Airport are listed in Section IV of Appendix F. These include stricter emission controls for aircraft engines, control of aircraft operations at the airport, purchase of a buffer zone of land south of the main runway, and local surface traffic controls on the airport.

The major mitigation measures proposed to reduce carbon monoxide concentration at all airports are: 1) stricter aircraft engine controls, 2) 25% of the air passengers and employees using mass transit, 3) reduced "kiss-and-fly", and 4) 25% ride-sharing by employees.

- 5) energy--implementation of the regional airport plan could result in 4.9% more fuel consumption in 1987 and 5.2% more fuel consumption in 1997 than would occur if there is no shift in the distribution of air traffic. Such consumption differences are primarily based on the assumption that concentrating flights at San Francisco enables airlines to use larger aircraft and hence minimize the total number of Bay Area flights. Increased in flight fuel consumption is partially offset by increased fuel use due to airline delay (caused by congested airspace) and increased car travel. Mitigation to energy consumption includes: 1) encouragement of a minimum annualized airplane load factor of 60%, 2) reduction of intra-bay airline operations, 3) support for airfield improvements to reduce delay, and 4) support for increased use of transit and ride-sharing.
- 6) bay fill/wetlands impact--The San Francisco Bay Plan prepared by the Bay Conservation and Development Commission states that airport expansion or construction on Bay fill should be permitted only if no feasible upland alternatives are available. Past regional studies have addressed the need for constructing new runways in the Bay to meet requirements for additional airport system capacity problems in the next 20 years be mitigated through systems management techniques, development of a system of general aviation reliever airports, and the possible diversion of some traffic to Travis AFB or a new airport site in the North Bay.

Some proposed improvements to general aviation airports may have an impact on the Bay or wetland areas. These include improvements at Gross Field (new crosswise runway), Fremont (new reliever airport), Palo Alto (second parallel runway), and San Carlos (runway extension). Alternatives for these projects should be considered prior to implementation.

III. SETTING, IMPACTS AND MITIGATION

This chapter of the EIR references the pages in the Summary Report that provide information on the setting, impacts and mitigation policies and programs. Table III-1 summarizes the regional impacts of the plan alternatives.

A. General Setting

A general description of the current Bay Area airport system is provided on pages 5 thru 19 in the Summary Report. Included in the description are 1) an overview of the circumstances that warranted new regional airport policies, 2) a review of current levels of aviation activities at San Francisco, Oakland and San Jose airports, 3) alternative growth patterns for each of the three airports, and 4) estimates of future aviation activity that could occur within the Bay Area.

More detailed description of the general setting is provided in Appendix A--Aviation Forecasts and Airport Alternatives.

B. Noise Impacts

The existing noise conditions and the potential noise impacts of alternative regional air traffic distributions are provided in EIR Table III-1 and on pages 25 thru 28 of the Summary Report. Tables III-2 and III-3 provide a more detailed breakdown, per airport, of existing and potential noise impacts.

Airport noise mitigation policies and programs are listed on pages 42-43 and pages 60-61 of the Summary Report.

More detailed description is provided in Appendix E--Airport Noise Impacts.

C. Air Quality Impacts

The air quality setting and impact analysis is broken into two segments: 1) regional impacts--for hydrocarbons (HC) and nitrogen oxides (NOx) and 2) local impacts - for carbon monoxide. These are described in Table EIR III-1 and on pages 28-30 in the Summary Report.

To study the regional air quality impacts, the amount of hydrocarbons and nitrogen oxides emitted by aircraft and airport-related vehicular activity were calculated for airport system alternatives with and without the mitigation measures for the years 1987 and 1997. The total amount of each pollutant was then compared to the projected regional emission inventory. Regional emissions were interpolated from the projections prepared for the San Francisco Bay Area Environmental Management Plan.

TABLE III-1

1987 SUMMARY COMPARISON OF AIRPORT SYSTEM ALTERNATIVES

YEAR	FORE-CAST RANGE	ALT.	DESCRIPTION	AIRPORT ALLOCATIONS (M.A.P.)	ANNUAL AIRCRAFT OPERATIONS	ANNUAL AIR CARRIER DELAY	AIRPORT GROUND ACCESS			AIR QUALITY EMISSIONS				
							AVE. DIST.	PASS. VMT	EMP. VMT	AIRCRAFT	AUTO	TOTAL	% REGION	
NOTES			-1-			-2-	-3-	-4-	-5-	-6-	-7-		-8-	
1987	LOW	1	Existing Airport Shares	SFO	28.8	405,570	10,500	21.9	643	285	13.2	7.3	20.5	1.3
			Passenger distribution	OAK	3.6									
			among airports same as	SJC	4.6									
			base year. Service con-	TOT	37.0									
			centrated at SFO											
	3a	Regional Airport Plan	SFO	24.0	423,340	7,020	18.6	562	301	13.9	6.6	20.5	1.3	
		OAK & SJC serve much	OAK	7.0										
		larger share of local	SJC	6.0										
		passengers	TOT	37.0										
	HIGH	1	Existing Airport Shares	SFO	33.5	460,610	18,920	21.9	748	307	15.1	8.7	23.8	1.6
			Passenger distribution	OAK	4.2									
			among airports same as	SJC	5.3									
			base year. Service con-	TOT	43.0									
			centrated at SFO											
		2	Airline Plan - Airlines	SFO	31.0	462,300	13,440	20.2	703	302	15.3	8.3	23.6	1.5
emphasize new service at			OAK	6.7										
OAK as SFO approaches			SJC	5.3										
31 MAP policy limit			TOT	43.0										
3a		Regional Airport Plan	SFO	27.6	482,830	10,400	18.5	650	301	15.6	8.0	23.6	1.5	
	OAK & SJC serve much	OAK	8.4											
	larger share of local	SJC	7.0											
	passengers	TOT	43.0											
3b	Regional Airport Plan/	SFO	27.0	484,630	9,700	17.6	620	298	15.6	7.7	23.3	1.5		
	North Bay - Same as 3a	OAK	8.0											
	except limited intra-	SJC	7.0											
	state service added in	NB	1.0											
	North Bay	TOT	43.0											
4a	SJC Constrained -	SFO	28.7	465,860	11,650	17.9	630	300	15.5	7.7	23.2	1.5		
	Service at SJC con-	OAK	8.0											
	strained below local	SJC	5.3											
	demand levels for en-	NB	1.0											
	vironmental reasons,	TOT	43.0											
but otherwise similar														
to 3b														

TABLE III-1

1987 SUMMARY COMPARISON OF AIRPORT SYSTEM ALTERNATIVES (CONT.)

ALT.	ROUTE SYSTEM	ENERGY USE			POP.	NOISE		AIRPORT EMPLOYMENT			NOTES
		DELAY	GROUND ACCESS	TOTAL		DWELL. UNIT	SCHOOLS/ HOSPITALS	ON AIRPORT	OFF AIRPORT	TOTAL	
	-9-	-10-	-11-		-12-	-13-	-14-	-15-	-16-		
1	1630.7	5.9	28.4	1665.0	46,640	16,510	23	36,980	7,030	44,010	1/ SFO-San Francisco Airport OAK-Oakland Airport SJC-San Jose Airport NB-North Bay Airport M.A.P. - Millions of Annual Pas- sengers
3a	1708.2	3.8	24.9	1736.9	45,640	16,480	18	35,420	7,700	43,120	2/ Annual hours of aircraft delay. *1997 IFR Demand/Capacity ratio. **1997 VFR2 Demand/ Capacity ratio.
1	1845.5	10.8	33.0	1889.3	61,400	21,510	24	39,820	7,840	47,660	3/ Average ground travel distance for all air passengers-miles.
2	1930.2	7.5	31.1	1968.8	57,720	20,140	25	39,120	8,220	47,340	4/ Annual Vehicle Miles of Travel for Air Pas- sengers-millions.
3a	1946.7	5.7	28.8	1981.2	57,860	20,960	22	37,600	8,490	46,090	5/ Annual Vehicle Miles of Travel for Airport Em- ployees-millions.
3b	1949.5	5.3	27.5	1982.3	55,940	20,370	22	38,400	8,510	46,990	6/ Tons per day of Hydrocarbons (HC) and Nitrogen Oxides (NO _x).
4a	1938.7	6.1	28.3	1973.1	56,800	20,440	26	39,350	8,400	47,750	7/ Tons per day of Hydrocarbons (HC) and Nitrogen Oxides (NO _x). Includes air passengers and employees.
											8/ Percent of regional emissions inventory at- tributed to aviation. Based on Air Quality Management Plan projections.
											9/ Millions of equivalent gallons of fuel used by aircraft in flight annually.
											10/ Millions of equivalent gallons of fuel used in delays to aircraft annually.
											11/ Millions of equivalent gallons of fuel used in ground access to airports annually.
											12/ Estimated population within 65 CNEL Contour.
											13/ Estimated number of dwelling units within 65 CNEL Contour.
											14/ Estimated number of schools and hospitals within 65 CNEL Contour.
											15/ From ABAG <u>Airport Employment Projections and Impacts.</u>
											16/ From ABAG <u>Airport Employment Projections and Impacts.</u>

TABLE III-1

1997 SUMMARY COMPARISON OF AIRPORT SYSTEM ALTERNATIVES

YEAR	FORE-CAST RANGE	ALT.	DESCRIPTION	AIRPORT		ANNUAL AIRCRAFT OPERATIONS	ANNUAL AIR CARRIER DELAY	AIRPORT GROUND ACCESS			AIR QUALITY EMISSIONS			
				ALLOCATIONS (M.A.P.)				AVE. DIST.	PASS. VMT	EMP. VMT	AIRCRAFT	AUTO	TOTAL	% REGION
NOTES					-1-		-2-	-3-	-4-	-5-	-6-	-7-	-8-	
1997	LOW	1	Existing Airport Shares	SFO	35.0	428,560	19,930	23.2	851	305	7.6	8.8	16.4	.9
			Passenger distribution	OAK	4.4									
			among airports same as	SJC	5.6									
			base year. Service con-	TOT	45.0									
			centrated at SFO											
		2	Airline Plan - Airlines	SFO	31.0	430,660	11,750	21.1	799	300	7.7	8.5	16.2	.9
			emphasize new service	OAK	8.4									
			at OAK as SFO ap-	SJC	5.6									
			proaches 31 MAP	TOT	45.0									
		3a	Regional Airport Plan	SFO	27.0	437,760	9,350	19.5	750	292	7.7	8.1	15.8	.9
			OAK and SJC serve much	OAK	10.0									
			larger share of local	SJC	8.0									
			passengers	TOT	45.0									
	HIGH	1	Existing Airport Shares	SFO	43.6	511,910	49,890	23.2	1059	339	9.1	11.1	20.2	1.1
			Passenger distribution	OAK	5.5									
			among airports same as	SJC	6.9									
			base year. Service con-	TOT	56.0									
			centrated at SFO											
		3a	Regional Airport Plan	SFO	32.2	527,590	15,800	19.3	921	325	9.4	10.1	19.5	1.1
			OAK and SJC serve much	OAK	13.8									
			larger share of local	SJC	10.0									
			passengers	TOT	56.0									
		3b	Regional Airport Plan/ North Bay - Same as 3a	SFO	31.0	532,480	13,900	18.5	892	324	9.4	9.8	19.2	1.1
			except limited intra-	OAK	13.0									
			state service added in	SJC	10.0									
			North Bay	NB	2.0									
				TOT	56.0									
		4a	SJC Constrained - Over-	SFO	33.0	505,630	15,500	19.6	941	327	9.4	10.2	19.6	1.1
			flow to SFO - SJC	OAK	13.0									
			limited to 8.0 MAP.	SJC	8.0									
			Overflow to SFO.	NB	2.0									
				TOT	56.0									
		4b	SJC Constrained - Over-	SFO	31.0	530,040	14,700	19.6	951	325	9.4	10.2	19.6	1.1
			flow to OAK - SJC	OAK	15.0									
			limited to 8.0 MAP.	SJC	8.0									
			Overflow to OAK.	NB	2.0									
				TOT	56.0									

TABLE III-1

1997 SUMMARY COMPARISON OF AIRPORT SYSTEM ALTERNATIVES (CONT.)

ALT.	ENERGY USE			NOISE			AIRPORT EMPLOYMENT			NOTES	
	ROUTE SYSTEM -9-	DELAY -10-	GROUND ACCESS -11-	TOTAL	POP. -12-	DWELL. UNIT -13-	SCHOOLS/ HOSPITALS -14-	ON AIRPORT -15-	OFF AIRPORT -16-		TOTAL
1	1789.9	10.8	33.5	1834.2	43,400	14,980	14	40,190	8,630	48,820	1/ SFO-San Francisco Airport M.A.P. - Millions OAK-Oakland Airport of Annual Pas- SJC-San Jose Airport sengers NB-North Bay Airport
2	1863.0	6.3	29.6	1898.9	39,700	13,750	11	38,860	9,310	48,170	2/ Annual hours of aircraft delay. *1997 IFR Demand/Capacity ratio. **1997 VFR2 Demand/ Capacity ratio.
3a	1869.2	4.9	27.8	1901.9	37,890	13,270	14	37,770	9,720	47,490	3/ Average ground travel distance for all air passengers-miles.
1	2129.0	27.4	39.2	2195.6	56,620	19,430	24	44,850	11,290	56,140	4/ Annual Vehicle Miles of Travel for Air Pas- sengers-millions.
3a	2264.0	8.3	34.1	2306.4	46,820	16,410	16	41,670	12,440	54,110	5/ Annual Vehicle Miles of Travel for Airport Employees-millions.
3b	2268.7	7.3	33.1	2309.1	45,180	15,920	16	41,770	12,440	54,210	6/ Tons per day of Hydrocarbons (HC) and Nitrogen Oxides (NO _x).
4a	2262.2	8.3	34.8	2305.3	46,340	16,140	17	42,240	12,150	54,390	7/ Tons per day of Hydrocarbons (HC) and Nitrogen Oxides (NO _x). Includes air pas- sengers and employees.
4b	2278.9	7.6	35.2	2321.7	45,040	15,940	17	41,630	12,090	53,720	8/ Percent of regional emissions inventory attri- buted to aviation. Based on Air Quality Management Plan data.
											9/ Millions of equivalent gallons of fuel used by aircraft in flight annually.
											10/ Millions of equivalent gallons of fuel used in delays to aircraft annually.
											11/ Millions of equivalent gallons of fuel used in ground access to airports annually.
											12/ Estimated population within 65 CNEL Contour.
											13/ Estimated number of dwelling units within 65 CNEL Contour.
											14/ Estimated number of schools and hospitals within CNEL Contour.
											15/ From ABAG <u>Airport Employment Projections and Impacts.</u>
											16/ From ABAG <u>Airport Employment Projections and Impacts.</u>

TABLE III-1

1997 SUMMARY COMPARISON OF AIRPORT SYSTEM ALTERNATIVES

YEAR	FORE- CAST RANGE	ALT.	DESCRIPTION	AIRPORT		ANNUAL AIRCRAFT OPERATIONS	ANNUAL AIR CARRIER DELAY	AIRPORT GROUND ACCESS			AIR QUALITY EMISSIONS			
				ALLOCATIONS (M.A.P.)				AVE. DIST.	PASS. VMT	FMP. VMT	AIRCRAFT	AUTO	TOTAL	% REGION
NOTES			-1-				-2-	-3-	-4-	-5-	-6-	-7-		-8-
1997	HIGH	4c	Limit SJC - Expand North	SFO	34.0	530,120	18,600	20.3	981	324	9.4	10.4	19.8	1.1
			Bay - SJC limited to 8.0	OAK	10.0									
			MAP. SFO and OAK limited	SJC	8.0									
			to 31.0 and 13.0 MAP.	NB	4.0									
			Domestic service ex- panded in North Bay	TOT	56.0									
		4d	Limit SJC - Overflow to Existing Airports. SJC limited to 8.0 MAP. No service in North Bay	SFO OAK SJC NB TOT	33.0 15.0 8.0 56.0	524,610	17,100	20.6	995	325	9.4	10.6	20.0	1.1

TABLE III-1

1997 SUMMARY COMPARISON OF AIRPORT SYSTEM ALTERNATIVES (CONT.)

ALT.	ENERGY USE				NOISE			AIRPORT EMPLOYMENT			NOTES
	ROUTE SYSTEM -9-	DELAY -10-	GROUND ACCESS -11-	TOTAL	POP. -12-	DWELL. UNIT -13-	SCHOOLS/ HOSPITALS -14-	ON AIRPORT -15-	OFF AIRPORT -16-	TOTAL	
4c	2290.0	10.5	36.3	2336.8	47,890	16,580	17	41,160	11,850	53,010	1/ SFO-San Francisco Airport M.A.P. - Millions OAK-Oakland Airport of Annual Pas- SJC-San Jose Airport sengers NB-North Bay Airport
4d	2249.4	9.1	36.8	2295.3	47,480	16,620	18	41,490	11,980	53,470	2/ Annual hours of aircraft delay. *1997 IFR Demand/Capacity ratio. **1997 VFR2 Demand/ Capacity ratio. 3/ Average ground travel distance for all air passengers-miles. 4/ Annual Vehicle Miles of Travel for Air Pas- sengers-millions. 5/ Annual Vehicle Miles of Travel for Airport Employees-millions. 6/ Tons per day of Hydrocarbons (HC) and Nitrogen Oxides (NO _x). 7/ Tons per day of Hydrocarbons (HC) and Nitro- gen Oxides (NO _x). Includes air passengers and employees. 8/ Percent of regional emissions inventory at- tributed to aviation. Based on Air Quality Management Plan data. 9/ Millions of equivalent gallons of fuel used by aircraft in flight annually. 10/ Millions of equivalent gallons of fuel used in delays to aircraft annually. 11/ Millions of equivalent gallons of fuel used in ground access to airports annually. 12/ Estimated population within 65 CNEL Corridor. 13/ Estimated number of dwelling units within 65 CNEL Corridor. 14/ Estimated number of schools and hospitals within 65 CNEL Corridor. 15/ From ABAG <u>Airport Employment Projections and Impacts.</u> 16/ From ABAG <u>Airport Employment Projections and Impacts.</u>

TABLE III-2

PROJECTED REGIONAL NOISE TRENDS BY AIRPORT

- Population Exposed to 65 CNEL or Greater -

<u>YEAR</u>	<u>FORECAST RANGE</u>	<u>ALTERNATIVE</u>	<u>AIRPORT</u>			<u>TOTAL</u>
			<u>SFO</u>	<u>OAK</u>	<u>SJC</u>	
1976		Existing	35,080	240	6,200	41,520
1987	Low	1	28,670	5,110	12,860	46,640
		3a	19,910	9,350	16,380	45,640
	High	1	41,460	5,530	14,410	61,400
		2	34,910	8,400	14,410	57,720
		3a	25,480	13,720	18,660	57,860
		3b	23,560	13,720	18,660	55,940
		4a	28,670	13,720	14,410	56,800
		No Growth	19,910	5,110	12,860	37,880
	Low	1	34,640	3,780	4,980	43,400
		2	28,240	6,480	4,980	39,700
		3a	22,470	7,270	8,150	37,890
	High	1	45,440	4,450	6,730	56,620
		3a	28,620	8,850	9,350	46,820
		3b	27,090	8,740	9,350	45,180
		4a	29,450	8,740	8,150	46,340
		4b	27,090	9,800	8,150	45,040
		4c	32,470	7,270	8,150	47,890
		4d	29,450	9,800	8,150	47,480
		No Growth	16,450	3,170	4,170	23,470

TABLE III-3

PROJECTED REGIONAL NOISE TRENDS BY AIRPORT

- Number of Dwelling Units, Schools and Hospitals
Exposed to 65 CNEL or Greater -

YEAR	FORECAST RANGE	ALTERNATIVE	ITEM	SFO	AIRPORT		TOTAL
					OAK	SJC	
1976		Existing	DU S&H	12,400 14	80 -	1,630 5	14,110 19
1987	Low	1	DU S&H	10,250 15	1,980 -	4,280 8	16,510 23
			DU S&H	7,300 9	3,610 1	5,570 8	16,480 18
		3a	DU S&H	14,530 16	2,130 -	4,850 8	21,510 24
			DU S&H	12,240 15	3,050 2	4,850 8	20,140 25
	High	2	DU S&H	9,220 10	5,340 3	6,400 9	20,960 22
			DU S&H	8,630 10	5,340 3	6,400 9	20,370 22
		3a	DU S&H	10,250 15	5,340 3	4,850 8	20,440 26
			DU S&H	7,300 9	1,980 -	4,280 8	13,560 17
		3b	DU S&H	15,640 18	1,730 -	2,060 6	19,430 24
			DU S&H	10,050 8	3,370 1	2,990 7	16,410 16
		4a	DU S&H	9,610 8	3,320 1	2,990 7	15,920 16
			DU S&H	10,290 9	3,320 1	2,530 7	16,140 17
		4b	DU S&H	9,610 8	3,800 2	2,530 7	15,940 17
			DU S&H	11,300 10	2,750 0	2,530 7	16,580 17
		4c	DU S&H	10,290 9	3,800 2	2,530 7	16,620 18
			DU S&H	5,910 5	1,260 0	1,180 3	8,350 8
		4d	DU S&H	15,640 18	1,730 -	2,060 6	19,430 24
			DU S&H	10,050 8	3,370 1	2,990 7	16,410 16

Table III-4 summarizes the results of this analysis. As can be seen, airport-related HC and NOx do not comprise a significant portion of the regional inventory--less than 3 percent for each pollutant under the worst case. Therefore, even if the emissions due to the airports were to be eliminated entirely, little or no effect would be detected in the regional ozone level.

Supplemental information on local air quality impacts is provided in Tables III-4, III-5 and III-6. These tables indicate the primary contributors to pollution levels the exceed Federal Air Quality Standards.

Air quality mitigation policies and programs are listed on pages 49, 61 and 62 of the Summary Report.

More detailed description is provided in Appendix F--Aviation Impacts on Air Quality.

D. Airport Ground Access

The existing airport access conditions, as well as projected future impacts, are provided in EIR Table III-1 and on pages 22-24 in the Summary Report.

To expand on the information in the Summary Report, Table III-7 summarizes the proportion of freeway capacity used by each airport resulting from redistribution of airline flights.

As seen in Table III-7, morning peak hour traffic accessing San Francisco Airport would contribute to existing major congestion on Route 101 south of the Airport (Alternative 1). Shifting traffic to other Bay Area airports (Alternative 3b) would result in a major reduction in airport traffic on this critical segment of the freeway. Except under Alternative 3b in 1997, Oakland Airport would not use a significant amount of freeway capacity. Because traffic destined to and from San Jose Airport is distributed over a number of access routes, no single facility is required to carry a major portion of the traffic demand. Thus under Alternative 1 or Alternative 3b, San Jose Airport's impact on the regional and local transportation system would be minimal. As noted earlier, however, San Jose Airport is bounded by freeways which are congested during peak hours so that traffic destined to the airport would experience difficult access problems.

Traffic mitigation measures are evaluated on page 25 and recommended on pages 43, 44, 56 57, and 58 of the Summary Report.

More detailed description of airport ground access is provided in Appendix D--Airport Ground Access Capacity.

TABLE III-4

SUMMARY OF AIRPORT-RELATED HYDROCARBON AND NO_x EMISSIONS
(Includes contribution from regional general aviation proposals)

HYDROCARBONS

<u>Year</u>	<u>Alternate</u>	<u>Combined Mitigation Measures</u>	<u>% of REGIONAL EMISSION INVENTORY</u>		
			<u>Aircraft</u>	<u>Ground Traffic</u>	<u>TOTAL</u>
1987	1	Yes	0.5	0.4	1.0
		No	1.7	0.4	2.1
1987	3 No Growth	Yes	0.6	0.4	1.0
		No	1.8	0.4	2.2
		Yes	.5	.2	.7
		No	1.3	.3	1.6
		Yes	0.1	0.4	0.5
		No	1.0	0.4	1.4
1997	3 No Growth	Yes	0.1	0.4	0.5
		No	1.0	0.4	1.4
		Yes	.1	.2	.3
		No	.7	.2	.9

NO_x

<u>Year</u>	<u>Alternate</u>	<u>Combined Mitigation Measures</u>	<u>% of REGIONAL EMISSION INVENTORY</u>		
			<u>Aircraft</u>	<u>Ground Traffic</u>	<u>TOTAL</u>
1987	1	Yes	1.5	0.7	2.2
		No	1.6	0.8	2.4
1987	3 No Growth	Yes	1.5	0.6	2.1
		No	1.6	0.7	2.3
		Yes	1.2	.5	1.7
		No	1.3	.5	1.8
1997	1	Yes	1.2	0.9	2.1
		No	1.9	0.9	2.8
1997	3 No Growth	Yes	1.2	0.7	1.9
		No	2.0	0.8	2.8
		Yes	.8	.5	1.3
		No	1.2	.5	1.7

TABLE III-5

CONTRIBUTORS TO 1-HOUR CO GROUND LEVEL CONCENTRATION

Airport/Receptor	Year/Alt./CMM	Meteor- ology	Predicted GLC, mg/m ³	Major Contributors	Contribution mg/m ³
SFIA/Terminal	Basecase	C	42.9	Idling autos, airport traffic	22.4 10.1
SJMA/Hamline & Spring St.	Basecase	F	56.5	Aircraft	19.4
				Background	17.0
				Non-Airport related traffic	15.8
	1987/1/NO	F	44.1	Aircraft	28.3
				Background	7.7
	1997/1/NO	F	50.5	Aircraft	35.9
				Background	7.7

One-hour CO standard, 40.8 mg/m³.

TABLE III-6

CONTRIBUTORS TO 8-HOUR CO GROUND LEVEL CONCENTRATION

Airport/Receptor	Year/Alt./CMM	Meteor- ology	Predicted GLC, mg/m ³	Major Contributors	Contribution, mg/m ³
SFIA/Terminal	Basecase	C	24.1	Idling Autos	12.0
		E	16.7	Idling Autos	5.5
SFIA/Roblar Ave.	Basecase	E	15.8	Aircraft	9.6
	1997/3/NO	E	12.2	Aircraft	9.3
SFIA/Belle Air School	Basecase	E	11.8	Aircraft	3.8
	1997/1/NO	E	11.4	Aircraft	7.2
SJMA/Terminal	Basecase	C	15.2	Background Airport traffic	11.7 3.5
	Basecase	F	21.5	Background Airport traffic	11.7 9.8
	1987/3/YES	F	13.3	Airport traffic Background	8.0 5.3
	1997/1/NO	C	12.5	Aircraft Non-Airport related traffic	3.0 3.0
	1997/1/NO	F	29.0	Aircraft	18.7

Eight-hour CO standard, 10.5 mg/m³.

TABLE III-7

PERCENT OF FREEWAY CAPACITY USED BY AIRPORT
(Average Day of Peak Month)

<u>Airport</u>	<u>Access Route/Location</u>	<u>ALTERNATIVE 1</u>		<u>ALTERNATIVE 3B</u>	
		<u>1987</u>	<u>1997</u>	<u>1987</u>	<u>1997</u>
San Francisco	101 - North of Rte. 380 Jct.	29	41	23	26
	101 - South of Broadway	30	38	23	27
	380 - West of Airport	26	34	22	27
Oakland	17 - North of Hegenberger	10	13	17	28
	17 - South of Davis St.	4	5	7	9
San Jose	17 - South of Coleman	7	8	9	11
	17 - North of Brokaw	6	5	6	7
	101 - North of Guadalupe	4	5	5	6
	101 - South of Rte. 17 Jct.	9	12	11	17

E. Airport and Airspace Capacity

The existing airport and airspace capacity conditions, and those which could occur under the recommended plan, are described in EIR Table III-1 and pages 19-21 of the Summary Report.

Further information on individual airport capacity is as follows:

- **San Francisco Airport.** The crossing runway pattern at San Francisco Airport permits the airfield to be operated in a number of different configurations depending on wind direction and ceiling and visibility conditions. During peak activity periods and during good weather conditions (VFR-1), runway capacity using runways 28L and 28R for arrivals and 1L and 1R for departures is about 110 operations per hour. All other runway configurations yield hourly capacities of about 100 operations. During instrument weather conditions, hourly capacity is reduced to 35-40 operations per hour. The weighted hourly capacity (average capacity given the percentage use of the various runway configurations) is about 79 operations per hour. Given this factor and the hourly and daily activity pattern at San Francisco, the Annual Service Volume was calculated to be about 400,000 annual operations. Relatively higher delays would be experienced at San Francisco Airport in 1987 and 1997 if the airport continues to accommodate its present share of traffic and if general aviation activity increases to the forecast levels (Alternative 1).

Total annual delay would also increase if a greater portion of Bay Area airline traffic is shifted to Oakland, San Jose and a North Bay Airport (Alternative 3b), but to a much lower level. Additionally, this alternative would permit a much higher volume of general aviation activity at San Francisco Airport. Total delay under either alternative would be substantially reduced if access by general aviation were limited.

- **Oakland Airport.** As airline service is expanded and improved at Oakland Airport, the aircraft mix will reflect a much higher portion of wide-body aircraft than exists today. Such an increase would have a significant impact on the theoretical hourly capacity of the main runway because of the wake turbulence separation requirements. However, as aircraft activity increases, the pattern of use will also change. More flights will be scheduled in presently low activity hours of the day increasing the annual use of the airport. Thus, the low hourly capacity would be compensated for by the higher annual use resulting in little change in the theoretical runway capacity. The VFR (visual flight rules) hourly capacity of main runway is approximately 50 operations per hour compared to an IFR (instrument flight rules) capacity of approximately 42 operations per hour.

The Annual Service Volume was estimated to be 184,000 annual aircraft movements. Oakland Airport would have an excess of capacity over demand for all the alternatives evaluated.

- **San Jose Airport.** The runway configuration at San Jose Airport consists of three parallel northwest-southeast runways. The longest runway (12R-30L) accommodates all of the air carrier operations and general aviation jets. Runway 12L-30R is used for general aviation of all categories except jets. The shortest runway (11-29) is used for "touch and go" training activity. Local training activity is a significant portion of general aviation activity on the airport. The high proportion of touch and go activity coupled with the three runway configurations enables the airport to handle a fairly high volume of total operations. The capacity analysis showed that for the runway configuration at San Jose Airport, the hourly capacity is sensitive to a change in aircraft mix. The VFR hourly capacity was found to be between 308 and 322 operations per hour. Future IFR capacity, based on this analysis as well as the analysis conducted for the San Jose Airport Master Plan, showed a maximum hourly capacity of 54-56 operations per hour. These parameters led to a calculated Annual Service Volume of 800,000 operations in 1987. Because of projected changes in the aircraft mix, the Annual Service Volume would decrease to 770,000 operations in 1997. This analysis indicates that capacity is available for an increase in both air carrier and general aviation activity above present volumes.
- **North Bay Airport.** Regional forecast for 1997 indicate a potential for 2 million annual passengers and 21,900 operations resulting from intrastate passenger demand in the North Bay. The plan further states that the potential for joint-use of Travis AFB should be reconsidered around 1990. The projected volume of operations is well below the airfield capacity available at Travis AFB.

Airspace and airport mitigation policies and programs are listed on page 43, 55, and 56 in the Summary Report.

More detailed description is provided in Appendices B and C--Airfield Capacity and Airspace Capacity.

F. Energy Use

The existing levels of energy use, as well as those projected under the recommended plan, are described in EIR Table III-1 and on pages 30-31 of the Summary Report.

As indicated in the Summary Plan, and shown in Table III-8, Alternative 1 represents a better overall alternative from an energy standpoint. This advantage is due to the potential for using larger aircraft and hence minimizing the total number of Bay Area flights. Airlines serving Oakland and San Jose Airports in Alternative 3b must provide service at levels sufficient to meet the scheduling needs of passengers in their service areas. This results in additional plane-miles compared to a system which concentrates flights at one airport.

The traffic allocation in Alternative 3b does, however, minimize energy consumed in ground access and aircraft delay. This occurs because a greater number of passengers could use a closer airport and because air traffic is redistributed, thereby reducing runway and airspace congestion. In total, Alternative 3b would require about 93 million equivalent gallons more fuel in 1987 (4.9%) and 113.5 million equivalent gallons more fuel in 1997 (5.2%).

It is also worth comparing Alternatives 3a and 3b from an energy demand perspective. The difference between Alternative 3a and 3b is the incremental energy requirements associated with a North Bay airport.

Under Alternative 3a, intrastate passenger demand from the North Bay is served at San Francisco and Oakland Airports. Accommodating some intrastate traffic at a North Bay airport reduces the average plane load slightly for intrastate service and results in a correspondingly higher level of operations. Under Alternative 3b, approximately 2.8 million more gallons of fuel are used in-flight annually in 1987 compared to Alternative 3a. The difference in fuel consumption increases to 4.7 million gallons annually in 1997. This increase is counterbalanced by reductions in ground access energy demand (due to the shorter ground trip for some passengers) and reductions in airline delays (since North Bay airline flights overfly congested airspace). The difference in total energy demand for the two alternatives is less than .1%.

Energy mitigation policies and programs are recommended on pages 44, 62 and 63 of the Summary Plan.

More detailed description is provided in Appendix G--Energy Use.

G. Growth Inducement

Airport employment growth and related land use impacts are presented in EIR Table III-1 and on page 33 of the Summary Plan.

All the current and future people employed at the airports require services provided by "local-serving" employment. Local serving includes such employment categories as retail trade, professional and business services and state and local government. Therefore, the new airport jobs will create additional or secondary jobs in other employment categories.

TABLE III-8

ENERGY ANALYSIS OF AIRPORT SYSTEM ALTERNATIVES

(Millions of Equivalent Gallons of Fuel Used Annually)

<u>Year</u>	<u>Forecast Range</u>	<u>Alternative</u>	<u>In-Flight Fuel Consumption</u>	<u>Aircraft Delay</u>	<u>Ground Access</u>	<u>Total</u>
1977		Existing	1275.0	3.9	25.2	1304.1
1987	Low	1	1630.7	5.9	28.4	1665.0
		3a	1708.2	3.8	24.9	1736.9
	High	1	1845.5	10.8	33.0	1889.3
		2	1930.2	7.5	31.1	1968.8
		3a	1946.7	5.7	28.8	1981.2
		3b	1949.5	5.3	27.5	1982.3
		4a	1938.7	6.1	28.3	1973.1
1997	Low	1	1789.9	10.8	33.5	1834.2
		2	1863.0	6.3	29.6	1898.9
		3a	1869.2	4.9	27.8	1901.9
	High	1	2129.0	27.4	39.2	2195.6
		3a	2264.0	8.3	34.1	2306.4
		3b	2268.7	7.3	33.1	2309.1
		4a	2262.2	8.3	34.8	2305.3
		4b	2278.9	7.6	35.2	2321.7
		4c	2290.0	10.5	36.3	2336.8
		4d	2249.4	9.1	36.8	2295.3

Alternative 1 - Existing Airport Shares
 Alternative 2 - Airline Plan
 Alternative 3 - Regional Airport Plan
 Alternative 3b - Regional Airport Plan with North Bay
 Alternative 4 - San Jose Constrained

The ABAG Series III population and employment projections used the 1975 ratio of 1.17 local serving jobs created for every "basic" job. For purposes of this study, all airport related jobs will be considered "basic". The local serving to basic ratio is projected by Series III to change to 1.27 in 1985 and 1.30 in 1995. Table III-9 provides the range of projected secondary or local-serving jobs created by future airport-related employment.

TABLE III-9
SECONDARY EMPLOYMENT

	<u>San Francisco</u>	<u>Oakland</u>	<u>San Jose</u>
Existing	37154	6341	2181
1987 Range	39326- 45370	7933- 10783	3375 4823
1997 Range	39929- 50672	8690- 14337	3905- 6529

H. Bay Fill/Wetland Impacts

A number of air carrier and general aviation airports are located on or adjacent to the Bay shoreline and wetland areas. Expansion of these airports to serve regional aviation needs could have an impact on the Bay and Bay wetlands. The San Francisco Bay Plan prepared by the Bay Conservation and Development Commission (BCDC) states that airport expansion or construction on Bay fill should be permitted only if no feasible upland alternatives are available. Airports have been major generators of Bay fill; the location of airports adjacent to the Bay reflects the advantages of such sites with respect to aircraft landing and takeoff patterns and air safety.

- **Air Carrier Airports.** Construction of new runways in the Bay at Oakland or San Francisco Airports would be one way to provide additional capacity to meet possible long-range aviation demands. However, the current plan does not recommend new runways in the Bay because a) demand forecasts do not justify such construction within the next 20 years, and b) mitigation measures are proposed to help alleviate critical capacity problems.

Even if airline traffic is redistributed among Bay Area airports as recommended in the regional plan, airport and airspace capacity will not be sufficient to avoid major delays and service disruptions during bad weather. The regional plan recommends that capacity problems be mitigated during these periods through systems management techniques,

development of "reliever" general aviation airports for small aircraft, and diversion of some traffic to Travis AFB or a new airport site in the North Bay. (Hamilton AFB and Napa County Airport have been designated primary reliever airports in the North Bay and Fremont or a new airport in the Fremont area has been designated as a primary reliever general aviation airport in the South Bay.) System management techniques involve quotas or pricing to ration airspace use during critical periods. Reliever general aviation airports having instrument landing systems would be of benefit since small aircraft could be diverted when critical capacity situations arose at San Francisco, Oakland or San Jose airports. Travis AFB or a new airport site could be used to serve intrastate air travelers generated in the North Bay or, perhaps, interstate and international traffic if other Bay Area airports become saturated.

- General Aviation Airports. Various general aviation airport improvements proposed in the regional plan also have potential impacts on the Bay and wetland areas. Airports that are located on the Bay shoreline or have the potential for some impact are listed below.
 - Hamilton AFB. Hamilton AFB has been designated in the regional plan along with Napa County as having the primary potential for relieving San Francisco and Oakland airports. Since general aviation operations at Hamilton AFB would involve the use of existing facilities, any additional impact on the Bay would be minimal.
 - Gness Field. Gness Field may be expanded to meet County aviation needs. Such a decision should be made concurrently with a determination on the future role of Hamilton AFB. Expansion of the airport would require construction of a crosswind runway to improve capacity and safety. The runway and associated aprons would involve the development of diked wetland areas.
 - San Carlos Airport. Extension of the runway is proposed to enable the airport to accommodate a larger portion of the general aviation aircraft fleet. Improved runway capability would divert small aircraft from San Francisco Airport. The runway extension would require a permit from BCDC.
 - Fremont Airport. A study is recommended to determine the best site for a reliever general aviation airport to relocate training activity from San Jose Airport. The significant amount of training activity at San Jose, combined with commercial airline use, poses a significant safety problem. Development of a reliever airport in the Fremont area would also help mitigate the need for a second runway at Palo Alto Airport. It is likely that several possible sites will be located on diked wetland areas.

- Palo Alto Airport. The regional plan recognizes the recommendations from the Baylands Master Plan that would limit the airport to a single runway. However, a second runway--requiring a BCDC permit--would still be considered in the regional plan if other proposals for alleviating safety problems at San Jose Airport are not implemented.
- Moffett Field NAS. The regional plan proposes that Moffett NAS be studied to determine its potential for interim use as a general aviation reliever airport. Potential use for touch and go training would not require any improvements to existing facilities and would, therefore, not impact the Bay or Bay wetlands.

IV. SIGNIFICANT ENVIRONMENTAL EFFECTS THAT CANNOT BE AVOIDED

A. Short-termed Uses Versus Long-term Productivity

In the short term each airport will pursue plans for facility expansion to respond to passenger demand. Such expansion will likely include efforts to facilitate more aircraft operations and reduce delays.

While physical expansion will satisfy immediate and future airport user demands, they may be at the expense of long-term environmental consequences. For example, San Francisco Airport may grow quickly to provide additional passenger services and amenities. In so doing, it may attract a regional share of the air passengers larger than called for in this plan and thereby cause noise, air quality, airspace and traffic congestion problems greater than desired.

A change in the role of each major airport will promote long-term efficient and productive use of the entire Bay Area airport system. The proposed plan policies recognize the need to achieve a balance between the short-term needs of individual airports and the longer-termed environmental goals of the entire Bay Area.

B. Irreversible Environmental Changes

As indicated throughout the plan, each airport system alternative represents a specific distribution of traffic among Bay Area airports. To the extent that a particular allocation scheme requires a larger airport, modifications resulting from new construction will be permanent.

On the other hand, some environmental impacts are reversible. Noise, air quality and airspace capacity will be monitored to determine if there are environmental improvements as anticipated in the plan. If there is little progress in reducing undesired impacts, new mitigation measures will be needed.

V. EIR AUTHORS AND CONSULTANTS; ORGANIZATIONS CONSULTED

EIR Authors

Association of Bay Area Governments
Metropolitan Transportation Commission
Hotel Claremont
Berkeley, CA 94705
Gordon Jacoby, ABAG Staff
Chris Brittle, MTC Staff

Summary Plan and EIR Consultants

Consultant

Tasks

Association of Bay Area
Governments

- Airport Employment Projections and Impacts
- Air Quality Analysis
- Airport Noise Impact Assessment
- Environmental Impact Report

California Department of
Transportation

- Airport Employee Survey
- Inventory of Ground Survey Facilities and Services
- Analyses of Ground Access Capacity
- Analysis of Highway Congestion
- Truck Traffic Forecasts
- Airport Parking Requirements

Hodges and Shutt/Aviation
Planning Services

- Air Cargo Forecasts
- Aircraft Operations Forecasts
- Aircraft Operations Input to Noise Model
- Airport Capacity Analysis

Peat, Marwick, Mitchell &
Company
The Parry Company

- Airspace Capacity Analysis
- Noise Model Calibration
- Noise Model Projections

The Transpo Group

- Potential Diversion of Passengers to Future Rail Modes
- Air Passenger Mode Split Model

Agencies Consulted

San Francisco Airport
Oakland Airport
San Jose Airport

Hayward Airport
Livermore Airport
Buchanan Airport
Gross Airport
Napa County Airport
Half Moon Bay Airport
Palo Alto Airport
San Carlos Airport
Reid-Hillview Airport
South County Airport
Nut Tree Airport
Cloverdale Airport
Healdsburg Airport
Petaluma Airport
Sonoma County

Alameda County Airport Land Use Commission

Bay Conservation and Development Commission

Santa Clara County Land Use Commission

San Mateo County Airport Land Use Commission

San Francisco/San Mateo County Joint
Powers Board for the Land Use Study
for San Francisco Airport and its Environs

California Department of Transportation

U.S. Federal Aviation Administration

U.S. Civil Aeronautics Board

VI. COMMENTS RECEIVED ON THE DRAFT EIR OF THE REGIONAL AIRPORT PLAN

Comments

Marie Cleasby, President, San Francisco Tomorrow,
comments prepared by Sue Smith

The 10 year expenditure programs described in the proposed 1980 RTP Update permit San Francisco Airport a \$255 million investment program. That figure should be deleted until there are full public and agency reviews.

Disappointed at the lack of attention and serious effort to the need for adequate flight service at Oakland Airport.

Philip E. Kern, Senior Planner, San Francisco Bay
Conservation and Development Commission

The EIR must evaluate the impact of regional airport policies on the Bay and other wetlands.

William F. Powers, Director of Community Development,
City of Sunnyvale

It is our understanding that the Draft EIR incorporates by reference the concept expressed in the Master Plan for the expansion of the San Jose Municipal Airport of using Moffett Field for joint military and civil use to accommodate further Countywide growth and training activity. This concept should not be incorporated into the Regional Airport Plan without

Staff Response

The proposed \$255 million investment program is included in the description of San Francisco Airport's proposed development plan. Any projects contained within their plan are required to comply with environmental laws and would be reviewed by MTC/ABAG as to their consistency with the policies of the Regional Airport Plan.

A central theme of the Regional Airport Plan is to get greater use of Oakland Airport. Many of the policies, including those of regional traffic allocations, regional noise allocation, regional programming of aviation Trust Fund assistance, airspace safety proposals and transit access proposals, are aimed at having Oakland Airport serve a larger share of the Bay Area's air travel.

An evaluation of the impact of the airport policies on the Bay and other wetlands has been included in the Final EIR as Section H in Chapter III.

The Regional Airport Plan identifies Moffett Field NAS as a possible general aviation reliever airport to San Jose Airport and recommends it be studied for that purpose. Table VI-1 of the Plan, which summarizes the general aviation plan proposals, states the project review concerns at Moffett Field are noise and airspace safety.

Comments

William F. Powers, Director of Community Development,
City of Sunnyvale (Cont'd.)

benefit of an adequate environmental assessment.

Ellen Fletcher, Councilmember, City of Palo Alto

Disagrees with the DEIR statement that regional policies are concerned primarily with scheduling of improvements recommended in various (airport) master plans and are therefore not appropriate for a environmental assessment.

Bruce L. Balshone, Associate Planner, City of San Bruno

City recommends 31 MAP policy limit at San Francisco Airport be re-evaluated and number of flights reduced from present levels. City recommends cargo flights be redistributed to other airports.

City supports regional policies that would produce a better distribution of commercial traffic amongst

Staff Response

It is the intent of the Plan that such project review concerns be studied prior to more detailed recommendations on the future use of Moffett.

To further clarify this matter, it is proposed that the Plan be amended to read (addition underlined):

"It is noted that there are areas where additional study or policy clarification is required. Therefore, the plan recommends that:

- c) Santa Clara County update the Master Plans for Palo Alto, Reid-Hillview, and South County airports and consider potential joint use of Moffett Field NAS in its plans. Such consideration of joint use of Moffett Field should include both the environmental and economic consequences of that action."

There is no disagreement that environmental analysis should be conducted on general aviation projects. The statement in the Regional Airport Plan EIR merely indicates that EIRs have already been prepared as part of airport master plans and that additional EIRs will be prepared when specific development projects are being prepared. The regional general aviation policies establish concerns that should be contained in the local EIRs.

Although the number of aircraft operations would not be reduced under the regional plan, the noise exposure at San Francisco Airport would be significantly reduced. Under the regional noise allocation concept, all airlines -- including air cargo carriers -- would be required to operate within the more stringent "budget." The infrastructure of the air cargo industry does not lend itself to a major redistribution of cargo flights.

No comment required.

Comments

Staff Response

William C. Lockett, Chief
Regional Programs Division, Air Resources Board

When using incorporation by reference, the EIR should state where the incorporated document shall be made available to the public.

The environmental impact analysis should include the general aviation section of the Regional Airport Plan since regional policies would not have been addressed by any airport EIR as referenced.

The paragraph on Page II-3 referring to mitigation policies and programs should include air pollution issues.

Paragraph (4) - Additional mitigation measures that are suitable for reducing airport related emissions need to be identified to bring about compliance with CO standards.

The DEIR states that more detailed impact analysis is available in the Appendices and that these Appendices would be furnished upon request (p.I-2). Information pertaining to a number of ARB comments is contained in Appendix F, "Aviation Impacts on Air Quality".

The regional air quality impacts of general aviation airport development proposals are included in Table III-4. A notation has been added to this effect. Other significant impacts have been covered in the environmental assessment portion of various airport master plans.

Agreed. Air pollution has been added.

The paragraph has been re-written as follows:
Under the regional plan, air quality problems will be reduced at San Francisco Airport and increased at San Jose Airport as air passenger traffic is redistributed. There will continue to be violations of both the 1-hour and 8-hour carbon monoxide standards at San Jose Airport. There are no projected violations of the 1-hour standard at San Francisco Airport. There are some projected violations of the 8-hour standard; however, these could be eliminated, if the proposed mitigation measures are implemented. Additional mitigation measures that may help in achieving compliance at San Jose Airport are listed in Section IV of Appendix F. These include stricter emission controls for aircraft engines, control of aircraft operations at the airport, purchase of a buffer zone of land south of the main runway, and local surface traffic controls on the airport.

Comments

The Air Quality Emissions data should include carbon monoxide throughout Table III-1.

We understand that the Regional Airport Plan Summary Report is the "Summary Report" and that it was designed to fulfill the CEQA requirements for the revised airport policy revision and mitigation measures. We believe that this reference is insufficient and that specific mitigation measures should be included in a DEIR. The essential elements of an EIR should be contained in a single document.

The term "% of Regional Emission Inventory" should be defined.

Carol Horowitz, Planner
Marin County Comprehensive Planning Dept.

The DEIR should discuss the compatibility of the regional plan with local land use plans. Discussion of Hamilton AFB should address the consistency of the regional plan with the land use goals and criteria for the development of Hamilton AFB. This discussion should include an analysis of the compatibility of regional plans with existing and projected land uses.

Alan Henderson, Mayor
City of Palo Alto

Requests that MTC remove all language relating to a second runway at Palo Alto Airport Plan.

Staff Response

The purpose of Table III-1 is to summarize regional effects of different airport system alternatives. Local carbon monoxide problems are more appropriately summarized in Tables III-2, III-3, III-7, and III-8 of Appendix F.

The essential elements of the regional plan for mitigation of adverse impacts are described on pages II-5 to II-7.

The "% of Regional Emission Inventory" is defined in the notes for Table III-1 and on page III-1 of the DEIR.

Appendix I, the North Bay Aviation Study, has been added to the EIR and addresses these points on page IV-47 ff.

The plan notes that the need for a reliever training runway in the South Bay is critical and recommends that Moffett NAS be studied along with the possible development of a new general aviation airport in the Fremont area. If such improvements are not forthcoming, the least preferred alternative would be a second runway at Palo Alto Airport. Staff believes dropping all references to a second runway at Palo Alto would be premature, and therefore no change in the current language is recommended.

Comments

John West, District Director, Caltrans
By M. E. Hardin, Deputy District Director

Greater emphasis should be placed upon the coordination of various transit services within the region (to Bay Area airports). Inter-county travel can involve...lengthy transfer waits...and separate fares.

The issue of noise buffering of existing residences located near airports is not addressed. Please refer to our letter of June 19, 1980, responding to your Notice of Preparation. Noise buffering is only mentioned in reference to new housing (which would be an incompatible land use).

Staff Response

Agreed. Appendix D -- Airport Ground Access Capacity -- specifically discusses this point on page 69.

The regional position on this issue is contained in Airport Noise policies 1.6 to 1.8 (see Appendix J, Summary Report).

- 1.6 In order to resolve residual noise impacts -- those existing or projected impacts remaining after application of all reasonable on-airport measures -- a cooperative and continuing program shall be established between the airports and local communities to achieve land use compatibility.
- 1.7 "In-fill" of vacant land shall be permitted in existing or projected noise impact areas only when a) noise insulation is incorporated in new construction and is designed to reduce the maximum anticipated outside noise level for the project area (either existing or future, whichever is greater) to acceptable interior levels, and b) noise easements are concurrently provided to the airport.
- 1.8 Noise insulation and noise easements should not be used as a means to achieve compliance with the State's noise standards for large new developments in proximity to existing or proposed airports.

Also, the regional plan recommends the use of a "passenger facility charge" (often called a head tax) to help finance noise insulation of residences off the airport.

Comments

Denis T. Rice, Commissioner,
Marin County

The sentence at the bottom of page IV-51, Appendix I, North Bay Aviation Study, should be corrected to read: "Such federal concerns are just now being understood via experience learned at other airports...."

The statement under Item 2 on page IV-61, Appendix I, North Bay Aviation Study, should be amended to indicate possible land use incompatibility around Hamilton AFB due to airport safety considerations. Suggest the paragraph read: "There have been recent changes to local land use policies for Hamilton AFB resulting in incompatible residential development being located within noise impact boundaries and which provide for industrial/commercial development that is potentially incompatible from a safety standpoint."

Staff Response

Agreed.

Airport safety requirements should be considered in the regional plan as well as in local land use plans and policies. The suggested wording is appropriate and will be added in the report.

VII. COMMENTS RECEIVED ON THE REGIONAL AIRPORT PLAN

Comments

ABAG Regional Planning Committee

The Airport Plan should specify where there are conflicts with local government general plans.

The Airport Plan proposal for Moffett Field should indicate that analysis be conducted on the economic and environmental consequences of joint use of the airfield.

Ellen Fletcher, Councilmember, City of Palo Alto

Add a policy that indicates that "Regional airports shall be developed with the concurrence of the affected communities."

Staff Response

Table VI-1 in the Summary Report, which is referenced in the DEIR, indicates project review concerns for any future airport development. Conflicts with local land use plans have been identified in this table. Additionally, DEIR Appendix I, the North Bay Aviation Study, includes an issue paper on land use compatibility issues involving North Bay general aviation airports.

It is recommended that the words "land use" be added to the Project Review Concerns for Moffett.

Agreed (see comments on DEIR).

Concern for local government agreement with airport development is in the proposed Airport Plan.

Policy 1.1 concerning airline service at a new location expresses that such service "shall be planned and coordinated with local jurisdictions.

Similarly, policies recommended by the North Bay Study were developed by elected officials from that section of the region.

Therefore, except in instances where there is an overriding regional need, the Regional Airport Plan policies and proposals concur with local community policies.

It is not recommended that the suggested policy be added to the Plan.

Comments

Ellen Fletcher, Councilmember, City of Palo Alto
 (Cont'd.)

Delete paragraph where it is assumed that "it will be necessary to expand and improve the region's general aviation airports". The merit of such expansion has not been fully analyzed.

Staff Response

The regional need for expanded general aviation airports was analyzed and based on such factors as:

- a) need to provide commuter service from general aviation airports to regional commercial airports
- b) growing use of general aviation airports for corporate or business purposes
- c) need to relieve general aviation activity at congested commercial airports.

The paragraph should remain in the report.

John West, District Director, Caltrans
 By M. E. Hardin, Deputy District Director

Does "replace or retire" older aircraft for noise mitigation purposes mean retrofitting engines? If not, there is still a need to address such a measure.

The mitigation measure for reducing energy consumption suggests "re-engine older aircraft." What impact, if any, would such a measure have on noise reduction?

While public transit is discussed in terms of connecting airports, the provisions for the transit dependent community are still not evident.

The projected 31 MAP at SFO appears somewhat high when compared with the latest Caltrans' projection of 40 MAP at the Los Angeles Airport.

Yes, regional noise allocations were developed assuming replacement of some aircraft and retrofitting of others with new, quieter engines -- depending on aircraft type.

The new, more fuel-efficient engines are all high bypass retro engines having excellent noise abatement characteristics.

New survey information, providing updated air passenger ground origin/destination data, could be reviewed to determine the feasibility of such service.

It is the policy of the Regional Airport Planning Committee to review forecasts every two years. It is staff's understanding that the 40 MAP level is a policy constraint recommended by the Southern California Association of Governments and is not a forecast of traffic at Los Angeles Airport.

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